Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

SHORTER ARTICLES AND DISCUSSION

TABLES OF LINKAGE INTENSITIES

In the July, 1916, NATURALIST, Professor Emerson gives convenient formulæ for calculating linkage intensities. His formula (I) is especially useful because it is applicable either to cases of coupling or to cases of repulsion. I had independently worked out empirical formulae for calculating coupling and repulsion which are very similar to that given by Emerson; indeed they are identical with it, if 1 is substituted for r in cases of coupling and for s in cases of repulsion. I had failed to observe, what Emerson shows, that the two formulæ may be given a single generalized form.

TABLE I

THE F_2 RATIO, 9:3:3:1, AS AFFECTED BY COUPLING OR LINKAGE, A AND B ENTERING THE F_1 ZYGOTE IN THE SAME GAMETE

Ratio, Cross-over to Non-cross-over Gametes	Proportion Cross-over Gametes	F_2 Zygotes				
		AB	Ab	aB	ab	Total
$1:x$	$\frac{1}{x+1}$	$3x^2+2(2x+1)$	$2x+1$	$2x+1$	x^2	$(2x+2)^2$
1:1[1]	1/2	9	3	3	1	16
1:2	1/3	22	5	5	4	36
1:3	1/4	41	7	7	9	64
1:4	1/5	66	9	9	16	100
1:5	1/6	97	11	11	25	144
1:6	1/7	134	13	13	36	196
1:7	1/8	177	15	15	49	256
1:8	1/9	226	17	17	64	324
1:9	1/10	281	19	19	81	400
1:99	1/100	29,801	199	199	9,801	40,000
Limiting values[2]		3	0	0	1	4

I had also found it convenient, for my own use, to make out and enter in my notebook tables of equivalent gametic and zygotic series, so that when a suspected case of coupling or repulsion comes to notice the nearest integral gametic series can at once be determined by inspection of the table, without making the calcu-

[1] No coupling.

[2] Not distinguishable from the case in which A and B are due to a single genetic factor.

lation anew. With the idea that these tables may possibly be useful to others, they are given herewith. In making use of such tables it is necessary only to reduce to the basis of a common total the observed F_2 zygotic series and any series of the table with which a comparison is desired. The total given in the table is in each case the lowest one which involves no fractions. If one uses the tables, such formulæ as Emerson's (II–IV) will not be found necessary in estimating the strength of the linkage. Moreover those formulæ are less useful than tables in dealing with the modified dihybrid ratio, 9 : 3 : 4, which happens to have been the first case that I encountered in my own work. The modified ratio as affected by linkage may be read directly from the table by combining classes aB and ab.

TABLE II

THE F_2 RATIO, 9 : 3 : 3 : 1, AS AFFECTED BY REPULSION (NEGATIVE LINKAGE), A AND B ENTERING THE F_1 ZYGOTE IN DIFFERENT GAMETES

Ratio, Cross-over to Non-cross-over Gametes	Proportion Cross-over Gametes	F_2 Zygotes				
		AB	Ab	aB	ab	Total
$1:x$	$\frac{1}{x+1}$	$2(x^2+2x)+3$	x^2+2x	x^2+2x	1	$(2x+2)^2$
1:1[3]	1/2	9	3	3	1	16
1:2	1/3	19	8	8	1	36
1:3	1/4	33	15	15	1	64
1:4	1/5	51	24	24	1	100
1:5	1/6	73	35	35	1	144
1:6	1/7	99	48	48	1	196
1:7	1/8	129	63	63	1	256
1:8.	1/9	163	80	80	1	324
1:9	1/10	201	99	99	1	400
1:99	1/100	20,001	9,999	9,999	1	40,000
Limiting values[4]		2	1	1	0	4

[3] No repulsion.

[4] Not distinguishable from the case in which A and B are allelomorphs.

W. E. CASTLE

BUSSEY INSTITUTION,
July 10, 1916